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ABSTRACT

This document contains four papers from a symposium on innovation and creativity and their relationship to human resource development (HRD). "Intrapreneurial Programs and Their Impact on Sales, Profit, and Return to Investors" (Melissa H. Marcus, Dennis G. Tesolowski, Clinton H. Isbell) reports on a study in which 100 of 217 randomly selected Fortune 500 companies answered surveys examining intrapreneurship in their organizations and its impact on sales, profit, and return to investors. In "The Influence of Curiosity on Various Dimensions of Workplace Job Performance" (Thomas G. Reio, Jr.), a study is described that analyzed the results obtained when 233 subjects took 6 tests designed to show whether curiosity influences socialization-related learning and/or job performance. In "Organizational Innovation and Human Resource Development: A Critique" (Richard J. Torraco), organizational innovation is examined from the perspectives of HRD and management research and critical science research is used to examine educators' and managers' underlying values and goals with respect to innovation. "Leaders Behaving Badly: How to Block Innovation in Organizations" (Darlene F. Russ-Eft) discusses a study of leadership and corporate creativity in which 1,871 critical incidents describing leadership behaviors were gathered from 761 managers and nonmanagers representing 469 U.S. and Canadian organizations. (MN)

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7 **Innovation and Creativity**

Chair: Tim Wentling, University of Illinois

Intrapreneurial Programs and Their Impact on Sales, Profit, and Return to Investors
Melissa H. Marcus, Clemson University
Dennis G. Tesolowski, Clemson University
Clinton H. Isbell, Clemson University

The Influence of Curiosity on Various Dimensions of Workplace Job Performance
Thomas G. Reio, Jr., Virginia Polytechnic Institute and State University

Organizational Innovation and HRD: A Critique
Richard J. Torraco, University of Nebraska

Leaders Behaving Badly: How to Block Innovation in Organizations
Darlene F. Russ-Eft, AchieveGlobal

CE 077 265

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Intrapreneurial Programs and Their Impact on Sales, Profit, and Return to Investors

Melissa H. Marcus, Ed.D.
Clemson University

Dennis G. Tesolowski, Ed.D.
Clemson University

Clinton H. Isbell, Ed.D.
Clemson University

Intrapreneurship is becoming more evident in major corporations both nationally and internationally. The global impact of this concept could dramatically effect organizational profits and products. In this study Fortune 500 organizations were surveyed to determine the extent to which this emerging concept was incorporated into their own organizations and to what extent it had impacted the variables of sales, profit, and return to investors.

To date, research in the field of *intra*preneurship has been limited. The majority of prior research has focused on the appropriate utilization of rewards (Sathe, 1985; Souder, 1981; Kanter, 1983), management support (Souder, 1981; Macmillan, 1986), resource availability (Souder, 1981; Kanter, 1983), organizational structure (Souder, 1981; Sathe, 1985; Burgelman, 1984), and risk taking (Macmillan, 1986; Sathe, 1985; Burgelman, 1984; Kanter, 1983). Chisoholm (1987), Balkin and Logan (1988), and Brazeal and Weaver (1990) included descriptive and statistical studies in varying settings for the purpose of adding applied knowledge to the field of study as related to personal intrapreneurial characteristics. By incorporating the basis of prior descriptive research, it appears that the relationship of intrapreneurial programs to the corporate environment as well as its impact on corporate performance is an area for more specific investigation.

An examination of intrapreneurial variables indicates that research has tended to cluster into the specific areas of descriptive research, modeling, and empirical research dealing primarily with focused firm characteristics as they related to certain companies. To date, this empirical research has been limited and included primarily that of Knight (1985), Kuratko and Montagno (1989); and Kuratko, Montagno and Hornsby, (1990). Those interested in the field have proposed credible reasons for the use and advocacy of the intrapreneur. Dynamic changes in the corporate environment often contribute to the overall determination of additional considerations. This is especially evident given development and management of future innovations (Ellis, 1985). Yet, as research and development dollars have been viewed as more productive, the changing corporate environment requires a greater innovation base in order to remain competitive.

Problem Statement and Theoretical Framework

Quantitative research in the field of intrapreneurship has been somewhat limited (Miller, 1983). Given the dynamic conditions of both the corporate environment and the United States economy, the contributions provided by the intrapreneur are especially relevant (Backman, 1983). Employee contributions have become increasingly important in the overall organization, especially when considering the need to improve efficiency, effectiveness and various financial indicators. With the ever-changing workplace, those contributions may take many forms (Baumol, 1968; Cooper, 1985; Jones and Butler, 1992; Gupta, 1995). The concept of intrapreneurship is a technique that can be utilized in an attempt to incorporate employee contributions that may potentially lead to financial gain, while simultaneously positively effecting motivation, morale, and reward systems (Cole, 1959; Collins, 1981; Howell and Higgins, 1990; Knight, 1985; Kintzer, 1996). Thus, the purpose of this study was to investigate whether significant differences in performance existed when corporations report the presence of intrapreneurial programs within the existing organizational structure based on established financial indicators.

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This study investigated the corporate performance of Fortune 500 companies within ten (10) manufacturing industries in the United States by analyzing the impact of product and/or process development and/or improvement programs (otherwise termed intrapreneurial programs) on overall corporate performance. The investigation focused on corporate intrapreneurial programs in Fortune 500 firms and utilized a self-reporting questionnaire technique in order to determine the presence of such programs within the organization. Prior to distribution of the final research questionnaire a successful panel of experts and pilot study was selected and subsequently conducted. Further analysis was performed to determine the significant impact on company performance as related to sales, profit, and return to investors.

Research Hypotheses

The investigation of this research focused on ten (10) separate industries contained within the Manufacturing Division of the Standard Industrial Classification Manual (1987,1992). The focus of this investigation was formalized in the following research hypotheses and subsidiary questions.

H_{01}: When intrapreneurial programs are incorporated into the organization, responses and financial data will provide for the basis of comparison to conclude organizational performance, as measured by total sales, is not significantly impacted.

H_{02}: When intrapreneurial programs are incorporated into the organization, responses and financial data will provide for the basis of comparison to conclude that organizational performance, as measured by profit, is not significantly impacted.

H_{03}: When intrapreneurial programs are incorporated into the organization, responses and financial data will provide for the basis of comparisons to conclude that organizational performance, as measured by total return to investors, is not significantly impacted.

Subsidiary Question #1: Will the organization's perception of success of the intrapreneurial program be correlated to the length of time it has been present within the organization?

Subsidiary Question #2: Will the organization's perception of intrapreneurial program success be correlated to company size?

Subsidiary Question #3: Will the company's perception of intrapreneurial program success be correlated to functional area of product/idea development/improvement within the organizational structure?

Subsidiary Question #4: Will the organization's perception of intrapreneurial program success be correlated to the industry classification?

Methodology

Research Design

This survey research included testing hypotheses. The sampling method included a randomized design which incorporated a stratified sampling technique. In order to test the stated hypotheses, industry selection was incorporated. The selection was based upon prior literature which indicated that certain industries utilized intrapreneurial-type programs. Upon completion of the initial industry determination, random selection of companies from within the Fortune 500 was possible.

The research analysis included descriptive techniques (mean and frequency) and a correlational technique. The t-test, correlational, and descriptive techniques were utilized in combination to determine significant differences among companies with regard to relevant financial data.

Potential independent variables relevant to this study included: 1) the presence of intrapreneurial programs within a given organization, 2) perceptions of success with regard to organizational structure, 3) primary functional areas of intrapreneurship, and 4) number category of product and/or process development/improvement. The dependent or criterion variable in this research was the impact of the independent variable (presence of an intrapreneurial program) on overall organizational performance. Thus, the overall performance was measured according to impact on total sales, profit. and return to investors. Since the financial indicators were measured in different terms (return to investors as a percentage; and total sales, and profit as an aggregate dollar value), the independent variable was compared to each financial indicator separately.

Sample

This investigation randomly selected manufacturing firms from the population of Fortune 500 organizations. This focus on the Manufacturing Division of the Standard Industrial Classification was based on a review of the literature which indicated that a preponderance of intrapreneurial programs existed in large manufacturing firms as compared to other classification divisions. Approximately twenty-two (22) two-digit codes exist within the Standard Industrial Classification which represent the major groups within the Standard Industrial Classification Manual (1972, 1987 Editions).

Within each industry, 20-22 firms were randomly selected in order to provide for statistical and descriptive analysis. A composite listing of the names and addresses of the potential respondents (chief executive officers) was compiled through the use of the Compact Disclosure Database and cross-referenced with the 1993 Fortune 500 listing to ensure an accurate population. To allow for tracking procedures of the survey responses, a master list was developed. Five-hundred (500) firms comprised the total population for the research with 217 companies selected for sampling purposes. Procedures consistent with those utilized in the initial distribution were utilized in the follow-up mailing process with one hundred (100) questionnaires (46.1%) being returned.

As shown in Table I, the Fortune 500 companies selected for this research represented a cross-section of various manufacturing industries and were selected according to the Standard Industrial Classification.

Table I

Master List Coding for Industry By SIC Code: (Pilot Study and Research Distribution)

Code Number	Industry	Code Number	Industry
1	Food and Kindred Products	6	Industrial & Farm Equipment
2	Chemicals	7	Transportation Equipment
3	Computer & Office Equipment	8	Petroleum Refining
4	Electronics & Electrical Equipment	9	Publishing & Printing
5	Forest & Paper Products	10	Scientific, Photographic & Control Equipment

Data Analysis Procedures

Each questionnaire was identified with a packet number and industry number for follow-up purposes only. Database fields were designed to compute the percentage and/or frequency scores from raw scores and were statistically analyzed using the Statistical Analysis System. Questions within the research questionnaire were analyzed using descriptive, inferential and correlational techniques. In order to test each hypothesis, t-tests were conducted to investigate significant differences between each financial indicator and the specified independent variable. The correlational technique allowed for the development of a matrix for specific factors (within an organization) that were previously identified as the most important in the development of an intrapreneurial program. In order to accomplish this objective, respondents were requested to rank order the listing of items provided. Frequency and mean distributions were utilized to address the subsidiary questions proposed in this research.

Results and Conclusions

Research Analysis

The research sample (217 participants) were sent a survey instrument (as shown in Table II). One hundred participants (46.1%) responded. T-tests, mean and frequency distributions, and a correlational technique were incorporated for analysis.

Table II
Research Survey

Organizational Intrapreneurship Program Research Survey

Q#:_____
Ind#: _____

Intrapreneurial Programs

Directions: Please circle the appropriate response to the following questions as they refer to product and/or process development and improvement within your organization. If you respond positively to either question #1 or #2, please also indicate the length of time such a program has existed within your organization.

1.	Does an informal intrapreneurial program exist within your organization?	Yes	No	N/A		Less than 3 years	3-5 years	6-10 years	More than 10 years
2.	Does a formal intrapreneurial program exist within your organization?	Yes	No	N/A		Less than 3 years	3-5 years	6-10 years	More than 10 years
3.	Does your organization have formal policies that foster intrapreneurship?	Yes	No	N/A					
4.	Does your organization have formal procedures that foster intrapreneurship?	Yes	No	N/A					

5. What is the informal intrapreneurship program within your organization called? _____
6. What is the formal intrapreneurship program within your organization called? _____
7. In which functional area of your organization do the majority of intrapreneurial product/process development ideas originate? *Please choose only one response.*
   __ Engineering __ Materials Management __ Public Relations __ Other:
   __ Finance/Accounting __ Personnel __ Quality Control (Specify)
   __ Marketing __ Production __ Research & Development _____
8. Please rank order the following factors, providing a priority to their importance, with regard to product and/or process development (intrapreneurial) programs within your organization. (1=highest priority; 8=lowest priority).

RANK	FACTOR	RANK	FACTOR
___	Technology Considerations	___	Financial Analysis
___	Patent Potential	___	Product Design
___	Personnel	___	Resource Availability
___	Development Costs	___	Competitive Market Analysis

9. Please indicate (circle) the degree to which your organizational intrapreneurial program has impacted each of the following factors and whether the program positively or negatively impacted your organization:

a. TOTAL SALES	No Impact	Slight Impact	Moderate Impact	Significant Impact		Positive	Negative
b. PROFIT	No Impact	Slight Impact	Moderate Impact	Significant Impact		Positive	Negative
c. TOTAL RETURN TO INVESTORS	No Impact	Slight Impact	Moderate Impact	Significant Impact		Positive	Negative

Organizational Structure

10. Within the last 2 years, approximately how many products and/or product improvements developed through the intrapreneurial program have led to:

a. development of a prototype?	0	1-5	6-10	11-20	21-30	31-40	More than 40
b. test market stage?	0	1-5	6-10	11-20	21-30	31-40	More than 40
c. commercialization of the product?	0	1-5	6-10	11-20	21-30	31-40	More than 40
d. contributions to overall corporate sales?	0	1-5	6-10	11-20	21-30	31-40	More than 40

11. Within the 3 years prior to the intrapreneurial program, approximately how many products and/or product improvements led to:

a. development of a prototype?	0	1-5	6-10	11-20	21-30	31-40	More than 40
b. test market stage?	0	1-5	6-10	11-20	21-30	31-40	More than 40
c. commercialization of the product?	0	1-5	6-10	11-20	21-30	31-40	More than 40
d. contributions to overall corporate sales?	0	1-5	6-10	11-20	21-30	31-40	More than 40

The following statements (12-17) relate to the intrapreneurial program (formal or informal) that exists within your organization. Please indicate (circle) the degree to which you agree/disagree with each statement.

12.	The corporate philosophy is one in which innovation is emphasized.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable
13.	Goals are in place to encourage intrapreneurship.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable
14.	The organization's intrapreneurial program has procedures for obtaining funding for project development.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable
15.	Corporate incentives have been established to encourage participation in the intrapreneurial program.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable
16.	The organization has specific criteria for the development of intrapreneurial ideas.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable
17.	The intrapreneurial program is available to employees throughout the organization.	Strongly Agree	Somewhat Agree	Agree	No Opinion	Disagree	Somewhat Disagree	Strongly Disagree	Not Applicable

18. Please indicate (circle) the approximate number of organizational employees for each of the following categories:

domestically only	Less than 2,500	2,500 - 5,000	5,001 - 10,000	10,001 - 25,000	Greater than 25,000
domestically and internationally	Less than 2,500	2,500 - 5,000	5,001 - 10,000	10,001 - 25,000	Greater than 25,000

Policies and Procedures

19. Which policies within your organization, if any, relate to the concept of intrapreneurship?
20. Which procedures within your organization, if any, relate to the concept of intrapreneurship?

[If such policies and procedures exist, we would appreciate your assistance in obtaining a copy, provided such a request is consistent with company policy.]

NOTE: Please attach separate any comments you may wish to include.

Thank You For Your Assistance!!!!

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Each questionnaire was coded as to industry and sequential packet number to allow for follow-up. With regard to respondents, 75% (75) of the respondents returned the questionnaire on the initial mailing and the remaining 25% (25) on the follow-up.

General trends from the questionnaire categories indicated a 'moderate to significant impact" on the specified financial indicators under investigation. The number of developments increased over the 3-year time period prior to program implementation. With regard to organizational policies and procedures, respondents indicated a variety of agreement to various statements provided. Results of the investigation are included as Table III.

Table III

Comparison of Program Type vs. No Intrapreneurial Program for Sales, Profit, and Return to Investors

Dependent Variable	Program Existence	Mean	T	P-Value
PROGRAM TYPE: INFORMAL PROGRAM				
Sales	Intrapreneurial Program Exists	6910.58	-1.15	0.2540
	No Program	12567.78		
Profit	Intrapreneurial Program Exists	133.33	-1.83	0.0733
	No Program	571.24		
RTI	Intrapreneurial Program Exists	20.38	1.06	0.2909
	No Program	13.48		
PROGRAM TYPE: FORMAL PROGRAM				
Sales	Intrapreneurial program Exists	8136.65	-0.18	0.8570
	No Program	8790.36		
Profit	Intrapreneurial Program Exists	238.67	-0.40	0.6866
	No Program	310.91		
RTI	Intrapreneurial Program Exists	17.39	-0.18	0.8515
	No Program	18.63		
PROGRAM TYPE: ENTIRE PROGRAM (both Formal and Informal Programs)				
Sales	Intrapreneurial program Exists	8305.37	-0.92	0.3627
	No Program	13871.86		
Profit	Intrapreneurial Program Exists	198.60	-1.30	0.2004
	No Program	527.90		
RTI	Intrapreneurial Program Exists	18.04	0.12	0.9000

α=.05

Sales-The test for overall effect of informal intrapreneurial programs resulted in a t-value of -1.15 and a p-value of 0.2540. Similarly, the t-values (-0.18) and (-0.92) for formal intrapreneurial program and aggregate programs (formal and informal) were not significant at the .05 level and the null hypothesis was not rejected.

Profit-At the .05 level of significance the effect of informal intrapreneurial programs resulted in a t-value of -1.83. As previously seen with "sales", this was not significant at the .05 level and the null hypothesis was not rejected. Analysis of both the formal (t-value=-0.40) and the aggregate programs (t-value=-1.30) yielded similar data.

Return to Investors-For overall effect of informal intrapreneurial programs the analysis resulted in a t-value of 1.06. This was not significant at the .05 level and thus, the null hypothesis was not rejected. Similarly, the t-values for formal intrapreneurial programs (-0.18) and aggregate programs (0.12) were not significant at the .05 level and the null hypothesis was not rejected. As shown in Table IV, respondents were also asked to rank order a specified group of factors which were previously identified as important in the product development process.

Table IV
Pearson Correlation Coefficient matrix Indicating Factor Rank Considerations

	Technology	Patent Potential	Person	Develop-ment Cost	Financial Analysis	Prod Design	Resource Available	Compet Mkt Anal
Technology		-0.07 (0.58, n=70)	-0.17 (0.16, n=66)	0.08 (0.52, n=66)	**-0.31 (0.01, n=70)**	-0.17 (0.17, n=67)	**-0.28 (0.02, n=68)**	-0.02 (0.84, n=70)
Patent Potential			0.004 (0.97, n=66)	-0.14 (0.26, n=66)	0.18 (0.13, n=70)	**-0.33 (0.006, n=69)**	-0.09 (0.48, n=69)	-0.07 (0.58, n=71)
Personnel				**0.50 (.001, n=66)**	-0.20 (0.10, n=66)	0.30 (0.81, n=66)	-0.09 (0.49, n=66)	0.02 (0.88, n=66)
Development Cost					0.19 (0.11, n=66)	0.03 (0.81, n=66)	-0.15 (0.22, n=66)	**-0.61 (0.0001, n=66)**
Financial Analysis						**-0.36 (.002, n=67)**	-0.23 (0.06, n=68)	0.03 (0.82, n=70)
Product Design							-0.11 (0.39, n=67)	-0.21 (0.09, n=68)
Resource Avail-ability								0.01 (0.09, n=68)
Compet Mkt Analysis								

Note: Significant correlations in bold.
α=.05

Significant among correlations were the relationships between financial analysis and technology (r=-0.31); resource availability and technology (r=-.28); patent potential and product design (r=-0.33); personnel considerations and development costs (r=.50); competitive market analysis and development costs (r=-0.61); and product design and financial analysis (r=-0.36). Correlations between other variables proved inconclusive.

Summary

In summary, the research investigated whether incorporation of intrapreneurial programs into the organizational structure would provide an impact on organizational performance, as measured by total sales, profit, and return to investors. None of the hypotheses were rejected in this study. With regard to subsidiary question #1 which stated, "Will the organization's perception of success of the intrapreneurial program be correlated to the length of time it has been present within the organization?" Results indicated that for *product development/improvement in informal programs*, 55.56% of those responding indicated prototype development with programs that had been in existence for more than 10 years. The majority of respondents also indicated that informal programs had been in existence for more than ten (10) years for the number of products at the test market stage, commercialization of products, and contribution to overall corporate sales (60.00% for test market stage; 59.18% for commercialization of products, and 58.33% for corporate sales).

With regard to the existence of formal intrapreneurial programs, a cross tabulation of the variables indicated that programs which had been in existence for 3-5 years provided the largest number of successes in all categories (prototype, test market stage, commercialization of product, and contribution to corporate sales).

Subsidiary question #2 addressed whether the organization's perception of intrapreneurial program success was correlated to company size. Analysis of the data indicated that a majority of prototype success occurred within the category of 10,000-25,000 employees with 41.25%. The test market stage was also most successful in the category of 10,000-25,000 employees with 21.45%. Commercialization and contribution to corporate sales were most successful in the category of "Greater than 25,000 employees" with 29.37%.

Subsidiary question #3 investigated whether the company's perception of intrapreneurial program success was correlated to functional area of product/idea development/improvement (within the organizational structure). Respondents were asked to indicate which functional area provided the majority of product development/improvement for their organization. Respondents clearly indicated the most predominant area for such efforts to be the functional area of research and development with 44.26% responding. This category was followed by engineering with 32.79%. Frequency table analysis indicated that programs having "1-5" and "11-20" prototypes within the last two years, were most prominent in the engineering and research and development functional areas. Research and development was dominant for the category of "More than 40" developments.

At the test market stage level, the research and development functional area was dominant with 1-5 product developments with 18.08% and was closely followed by engineering with 16.39%. Data indicated that the *number of commercialized products* and *contribution to overall corporate sales within the last two years* was dominant in the engineering area with 20.00% and 18.75%, respectively and research and development with 16.92% and 15.63%, respectively.

Finally, the last subsidiary question investigated whether the organization's perception of intrapreneurial program success was correlated to the industry classification with results indicating that the computer, electronics, and scientific equipment categories were dominant for prototype development and test market stage (as shown in Table V).

Table V
Ranking Means for Development Factors

Variable	Mean	N	Order
Technology	2.78	70	1
Patent Potential	6.22	72	7
Personnel	6.33	66	8
Development Costs	4.65	66	6
Financial Analysis	4.02	70	4
Product Design	3.59	69	2*
Resource Availability	4.24	69	5
Compet Mkt Analysis	3.59	71	3*

*indicates tie

Commercialization of a product and *contribution to corporate sales* were most often indicated in the electronics industry and was followed by the computer industry. Ranking means for development factors further indicated that technology, product design, and competitive market analysis were most important (mean ranking order 1, 2, 3). Conversely, development costs, patent potential, and personnel factors were of lowest priority (with a mean ranking of 6, 7, 8, respectively). Respondents were asked to subjectively indicate the degree to which the intrapreneurial program within their organization had impacted each of the financial factors and whether that impact was positive or negative. Analysis by frequency distribution showed that (with regard to sales) 32.8% of the respondents indicated "moderate impact" and 35.8% indicated significant impact. Similarly, (with regard to profit) 37.3% indicated "moderate impact" while 26.9% indicated 'significant impact". Results for return to investors were parallel with 43.3% indicating "moderate impact' and 32.8% indicating "significant impact". All respondents indicated impact as being positive. Finally, with regard to industry classification and program success, the electronics and computer industries were most dominant.

Contribution to Knowledge in HRD

The topic of intrapreneurship has wide reaching impact to organizations representing various divisions. Because the concept of intrapreneurship is new to most organizational climates, the development and follow-

up of this research is paramount. The identification of 1) intrapreneurial programs, 2) organizational structure, and 3) policies and procedures provide a point from which the impact on financial indicators may be closely aligned with the future need to create efficiencies within the organization.

By investigating the impact of intrapreneurial programs on the financial aspects of the organization, researchers and managers alike will have an improved understanding of the effect of these programs on the entire organization. As these programs continue to become more and more evident in varying organizational structures, future research will provide an objective basis for determining the extent to which such programs are feasible and have the potential to be incorporated into the organizational structure.

The financial measures of this study, provide not only a basis for measuring the impact on profit, sales, and return to investors, but also impacts heavily the need for human resource development for policies, appropriate training opportunities, manpower management, and benefit/incentive programs.

References

Backman, J. (1983). Entrepreneurship and the Outlook for America (pp. 8, 243). New York: The Free Press.

Balkin, D. B. & Logan, J. W. (1988). Reward policies that support entrepreneurship. Compensation and Benefit Review, 20, 18-25.

Baumol, W. J. (1968). Entrepreneurship in economic theory. American Economic Review, 58, 64-65.

Brazeal, D. W. & Weaver, K. M. (1990). Differential motivating factors and traditional managers?: A look at the influence of reward systems and structures on performance among intrapreneurial and traditional managers. Journal of Creative Behavior, Fourth Quarter, 24, 4, 263-275.

Burgelman, R. (1984). Designs for corporate entrepreneurship. California Management Review, 26, 21-42.

Chisoholm, T. A. (1987). Intrapreneurship and bureaucracy. SAM Advanced Management Journal , 52, 36-40.

Cole, A.H. (1959). Business Enterprise in It's Social Setting (pp. 124, 128). Cambridge: Harvard University Press.

Collins, S. (1981). Incentive programs: Pros and cons. Personnel Journal, 60, 571-575.

Cooper, A. C. (1985). The role of incubator organizations in the founding of growth-oriented firms. Journal of Business Venturing, 1, 75-86.

Ellis, J. (1985). Starting a small business inside a big one. Money, 85-90.

Gupta, U. (1995). Intrapreneurs from the inside out. Information Week, 12-14.

Howell, J. M. & Higgins, C.A. (1990). Champions of technological innovation. Administrative Science Quarterly, 35, 2, 317- 341.

Jones, G. R. & Butler, J. E. (1992). Managing: Internal corporate entrepreneurship: An agency theory perspective. Journal of Management, 18, 4, 733-749.

Kanter, R. M. (1983). The change masters. Management Review, 72, 18-23.

Kintzer, F.C. (1996). Entrepreneurship in higher education: A critical balance. ED 401960, 17.

Knight, R. M. (1985). Corporate innovation and entrepreneurship in Canada. Business Horizons, 83, 85.

Kuratko, D. & Montagno, R. (1989). The intrapreneurial spirit. Training and Development Journal, V43, 10, 83-87.

Kuratko, D., Montagno, R. & Hornsby, J. (1990). Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. Strategic Management Journal, V11, NnSP, 49-58.

Macmillan, I.C. (1986). Corporate venturing: Alternatives, obstacles encountered, and experience effects. Journal of Business Venturing, 1, 177-191.

Miller, D. (1983). Entrepreneurial success correlates in three types of firms. Management Science, 29, 770, 776.

Sathe, V. (1985). Managing an entrepreneurial dilemma: Nurturing entrepreneurship and control in large corporations. Babson College Entrepreneurship Research Conference, Center for Entrepreneurial Studies, 636-657.

Souder, W. (1981). Encouraging entrepreneurship in large corporations. Research Management, 24, 18-22.

Standard Industrial Classification Manual (1987, 1992). Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

The Influence of Curiosity on Various Dimensions of Workplace Job Performance

Thomas G. Reio, Jr.
Virginia Polytechnic Institute and State University

Scant information exists about the possible roles of curiosity in informal workplace learning and job performance. In this research, 233 subjects took a a battery of tests: four measuring curiosity, one assessing socialization-related learning (a kind of informal learning), and one determining job performance. Curiosity was found to influence both socialization-related learning and job performance, indicating the desire for information does play a meaning role in workplace learning. Implications for adult learning and organizational socialization theory and practice were discussed.

In important learning environments like the workplace, continuous learning and thus curiosity assists people in making sense and use of increasing amounts of new, novel, and discrepant information. Indeed, Kozlowski (1995) claimed that from the moment one prepares to apply for a job, through learning the complex requisite technical and interpersonal skills of their position, to surmounting the daily challenges of an ever-changing work environment, the individual needs to be always ready to learn and learn more.

Ostroff and Kozlowski (1992), for instance, informed us that during the socialization process (the process of formally and informally communicating and transmitting an organization's technical job knowledge, culture, norms, and procedures), employees focus on acquiring new information to learn the technical and interpersonal skills necessary to properly perform in their new positions. The information needed to develop these technical skills comes from such diverse sources as official organizational literature, observation, and experimenting with new behaviors. Interpersonal skill information, alternatively, is derived mostly from mentors, supervisors, and coworkers. Therefore, new employees must be actively involved in gathering applicable information to learn the nuances of their position. By mastering these important job skills, the employee will be much more assured of higher levels of job performance and the organization will benefit.

McCloy, Campbell, and Cudek (1994) defined performance as "behaviors or actions that are relevant to the goals of the organization in question....[and it] is multidimensional" (p. 493). Motowidlo and Van Scotter (1994) identified two conceptually satisfying dimensions of job performance, i.e., task performance and contextual performance.

Curiosity, or the desire to gain information and knowledge (Berlyne, 1960), has been consistently extolled in the business literature as something worthy of encouragement in the workplace. Tjosvold and Field (1982) noted that managers could affectthe outcome of decision-making by structuring the manner in which group members were allowed to reach decisions. Groups instructed to be in a controversy condition (versus a concurrence condition) searched for more information and explored a problem in greater depth (exhibiting more curiosity).

Purpose of the Study

Deming (cited in Senge, 1993, p. 6) declared that people's "curiosity to learn" is destroyed as they mature, especially in the workplace, with particularly detrimental effects on both their creativity and concomitant capacity to accommodate change. A more thorough understanding of curiosity's role in organizational learning (i.e., socialization-related learning) and job performance would assist the field of HRD in comprehending curiosity's vital function in fostering improved formal and informal organizational learning; enabling them to act accordingly to promote it. Such knowledge could assist practitioners as they facilitate employee workplace adaptation or

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socialization through training endeavors and employee development in general. Consequently, the purpose of this research was to empirically investigate the possible influences of adult curiosity and socialization-related learning on the two aforementioned dimensions of job performance, task and contextual.

Curiosity and Adult Learning

Reeve (1992) proposed an interesting model in which curiosity was the first step in the intrinsic motivation process. Reeves claimed that adults ultimately apply the practical skills developed through play activities in childhood to discovering how their environments can be changed.

Tough (1969) discovered "satisfaction of curiosity" was the second most commonly expressed reason for engaging in adult learning projects. Candy (1991) claimed that by emphasizing self-directed learning activities as a method of instruction "will arouse curiosity...and increase information-seeking activities" (p. 57). Therefore, the importance of curiosity in self-directed learning activities seems to be particularly important.

Giambra, Camp, and Grodsky (1992) reported interest in learning, i.e., information seeking as indicated by the curiosity for people or things, does not lessen as people age. In their study, they observed that older adults differed from younger adults with respect to the nature of the information they sought: Younger adults preferred to learn through direct interaction, while older adults preferred to learn through more passive means, such as reading.

Cavalieri (1996), in a qualitative research study of famous inventors, found that problem solving was curiosity driven. She noted that the Wright brothers, upon experiencing many failures in developing the airplane, were driven by curiosity to solve their engineering problems and to try and try again. She gave another example, Art Jones, who was apparently driven by curiosity only to build the best exercise equipment in the world (Nautilus).

Socialization-Related Learning

Much of the effort to elucidate the nature of the socialization process has concentrated on an employee's adoption of organizational values, goals, and attitudes (e.g., Schein, 1988). More recently, however, a much greater emphasis has been placed on viewing the process from a learning perspective (socialization-related learning). Ostroff and Kozlowski (1992) and others (e.g., Miller & Jablin, 1991) have claimed that organizational socialization should be viewed primarily as a process of formally and informally communicating and transmitting an organization's technical job knowledge, culture, norms, and procedures. Through mostly informal means, new employees need to be actively involved in gathering the appropriate information to learn their jobs. Therefore, the organizational socialization process is essentially an information-seeking process which relies heavily on new employees taking a proactive role in acquiring information to resolve uncertainties and to master the technical and interpersonal skill requirements of their positions.

To resolve the uncertainties about one's new job setting, its relevant features, and how to accomplish one's required tasks, one must learn through "trial and error, watching, asking, reading, and practice" (Wiswell, 1993, p. 1). This applies to new employees as well as seasoned workers since this socialization-related learning occurs each time a new employee enters an organization. It also applies when they switch to another department, are promoted, get a new coworker or boss, learn a new job task, or even when going back to school (Morton, 1993).

What possible role, then, does curiosity have in the socialization process? Berlyne (1960) posited that curiosity manifests itself in three epistemic (information- or knowledge-seeking) ways: observation, consultation, and thinking. Berlyne claimed that during the first of these, observation, individuals place themselves in situations that will foster learning. He cited examples ranging broadly from seeking gossip to the systematic observations and experiments of science. During consultation, individuals choose to obtain verbal and written information. Examples of this include asking questions of coworkers or supervisors, reading organizational literature, and writing letters. Finally, there is thinking. Berlyne considered epistemic thinking part of "productive" or "creative" thinking. Thinking in this sense refers to individuals gaining

permanent possession of new knowledge. It differs significantly from "reproductive" thinking, where remembered material is called up to handle problematic situations.

New employees, then, more often in a necessarily high state of arousal, are motivated by feelings of uncertainty and employ many information sources and strategies to learn the interpersonal and technical requirements of their jobs. Among newcomers' socialization-related learning endeavors, Berlyne's (1960) collative variables (i.e., novelty, uncertainty, conflict, surprisingness, and complexity) would have particular relevance. Novel stimuli are more readily explored, the results of complex procedures are reflected upon, surprising information is remembered more clearly, and conflicting data are pondered. These activities all result in the assignment of meaning to present experiences, thereby assisting in the development of new cognitive maps (Miller & Jablin, 1991). All of these manifestations of epistemic curiosity and exploratory behavior are accompanied by observational, consultative, and thinking tactics which result in vital learning. Without this learning, newcomers are not likely to be socialized, turnover is more assured, and the organization will more probably suffer.

Curiosity and Job Performance

The notion that continuous learning, in general, is a necessary component of a workplace capable of adroitly handling change can scarcely be argued against. One facet of learning in an adult context could be an individual's degree of successful socialization-related learning, especially for newcomers (Ostroff& Kozlowski, 1992). Moreover, another manifestation of learning could be the performance of one's job, as it is unlikely one could perform their job for any period of time without the benefit of some prior and continuous learning (Miller & Jablin, 1991).

Motowidlo and Van Scotter (1994) described two dimensions of job performance. The first, task or technical job performance, is the behavior associated with maintaining and servicing an organization's technical core. It refers to the direct transformation of the raw goods of an organization into the goods and services that it produces. Examples of this would be teaching a college class, cashing one's paycheck at a bank, operating a printing press in a newspaper plant, or planting a tree. By contrast, the second dimension of job is contextual or interpersonal job performance. This is a function of one's interpersonal skill knowledge, i.e., it supports the broader social environment in which the technical core must function. Specifically, interpersonal job performance is most closely related to the helping and cooperative elements of desirable organizational behavior.

Method

Subjects. The cross-sectional sample consisted of 152 men and 81 women, 17 to 60 years old, from four companies in the service industry (N=233).

Instrumentation. Curiosity levels were determined by four well-studied, paper-and-pencil curiosity measures: The Melbourne Curiosity Inventory (MCI; Naylor, 1981), the State-Trait Personality Scale (STPI; Spielberger, Barker, Russell, De Crane, Westberry, Knight, & Marks, 1980), the Sensation Seeking Scale-Form V (SSS-V; Zuckerman, 1979), and the Novelty Experiencing Scale (NES; Pearson, 1970).

The MCI is a 40-item, self-report questionnaire measure of state and trait curiosity. The state curiosity scale asks respondents to designate how they feel at a particular moment, while the trait scale questions ask how they feel in general. The STPI is quite similar to the MCI in that it has both state and trait scales of curiosity (10 questions each), in addition to 10-item state and trait subscales of anger and anxiety (not examined in this research).

The Sensation Seeking Scale-Form V is a 40-item scale designed to measure sensation seeking. The test consists of four factor subscales: Disinhibition, Boredom Susceptibility, Thrill and Adventure Seeking, and Experience Seeking. Zuckerman, Ulrich, and McLauglin (1994) defined sensation seeking as "...the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (p. 563). The Disinhibition subscale represents the seeking of sensation stimuli through sexual activity, partying, and drinking. Boredom Susceptibility reflects a low tolerance for boredom and restlessness when there is a lack of varied stimulation in the environment. Thrill and Adventure

Seeking describes the desire to seek sensation stimuli through unusual or sometimes risky physical activities like mountain climbing. The fourth subscale, Experience Seeking, measures the seeking of unusual experiences and sensations and the unconventionalness of an individual's lifestyle.

The Novelty Experiencing Scale is an 80-item scale, consisting of four subscales measuring novelty experiencing or the motivation for new experiences. The tendency to seek novelty is broken down into four scales on the basis of the source of stimulation and the type of subjective experience. The source of stimulation can be internal or external to the individual, while the subjective quality of the experience is either cognitive or sensational. Pearson combined these classifications into a 2 x 2 model, yielding four forms of the tendency toward novelty experiencing: External Cognitive, Internal Cognitive, External Sensation, and Internal Sensation.

Socialization-related learning was determined by a modified version of the Workplace Adaptation Questionnaire (Morton, 1993). It is a self-reported, 22-item instrument, consisting of three subscales developed to measure employee socialization-related learning and one subscale that measures satisfaction with learning experiences. The four subscales are as follows: Job Knowledge, Acculturation to the Company, Establishing Relationships, and Satisfaction with Learning Experiences. Job knowledge refers to the extent respondents report mastering the tasks of their jobs. Acculturation to the company is a subscale that measures the extent to which employees learned the norms, values, and culture of their organizations. Establishing Relationships, the third subscale, assesses the employees' ability to identify coworkers who could provide useful information or who know their way around the organization. Lastly, the Satisfaction with Learning Experiences subscale evaluates employees' satisfaction with their learning experiences at the organization. For the purpose of this study, the Satisfaction with Learning subscale will not be examined.

Job performance and its two dimensions, Technical and Interpersonal (Motowidlo & Van Scotter, 1994), were assessed through a self-reported questionnaire measure developed for the purposes of this study. The 6-item instrument consists of three 2-item subscales; Overall Job Performance, Technical Job Performance, and Interpersonal Job Performance. Each of the six questions inquired about their current perceived level of job performance. The total instrument's reliability was .90.

Procedures. The tests were administered at the participants' places of work along with a demographic survey. The four companies, all operating in the suburbs of Washington, D.C., participated only on the condition of anonymity and were informed of the results. The purpose of the study was first explained to each subject, and the measures were then distributed, with an average administration time of 45 minutes per individual.

Data Analysis. All data analyses were performed with the EQS for Windows 5.4 routine.

Results

Table 1 shows the means, standard deviations, alphas, and number of items for each of the 12 curiosity subscales, the three socialization-related learning subscales, and the two job performance subscales.

Table 1. Descriptive Statistics for Instrument Subscales*

Subscale	M	SD	Alpha	# of Items
Job Knowledge	33.3	4.4	.96	8
Acculturation	19.0	3.5	.86	5
Establishing Relationships	21.2	3.0	.85	5
Melbourne State Curiosity	58.5	11.5	.94	20
Melbourne Trait Curiosity	60.8	10.0	.92	20
State-Trait Personality-State	27.4	5.1	.79	10
State-Trait Personality-Trait	28.1	5.1	.80	10
External Sensation	11.9	4.8	.85	20
Internal Cognitive	13.3	5.4	.90	20
Internal Sensation	10.9	4.5	.83	20

External Cognitive	11.0	4.7	.83	20
Disinhibition	47.3	10.2	.67	10
Boredom Susceptibility	52.6	11.7	.60	10
Thrill and Adventure Seeking	43.6	11.8	.76	10
Experience Seeking	52.5	10.1	.48	10
Technical Job Performance 7.1	2.1	.71	2	
Interpersonal Job Performance	7.8	1.7	.71	2

*Note. N=233

Three a priori determined (see Figures 1, 2, & 3) recursive path models suggesting the causal influence of curiosity on socialization-related learning and then job performance were tested. Standardized partial regression coefficients were calculated from a combination of the correlational matrix containing the three main study variables (curiosity, socialization-related learning, and job performance) and their standard deviations.

While each of the cognitive curiosity measures (MCI-state and trait, STPI-state and trait, and the NES's Internal and External Cognitive subscales) had somewhat moderate statistically significant relationships with both the learning and job performance variables in this study, the MCI subscales demonstrated the most robust relationships with the research variables and were used for subsequent calculations of standardized partial path coefficients (indeed each of the various curiosity subscales and the derived curiosity factor scores [not used in this study--see Reio, 1997] could have been meaningfully used as the first step in each of the 3 a priori determined path models). All of the following standardized partial path coefficients are significant at the $p < .001$ level.

In Figure 1, curiosity is represented as a single construct for the purpose of this simple theoretical model (MCI total score used), the standardized path coefficient for the path between curiosity and socialization-related learning (WAQ total score used) is .40, while the socialization-related learning to job performance (Total job performance score used) standardized path coefficient is .58. When interpreting this model, one would say that curiosity has an indirect influence on job performance, mediated through the socialization-related learning variable. Yet, the CFI (Comparative Fit Index) for this theoretical model was .89; thus, these data disconfirmed the model, suggesting the need for an additional path to more fully explain the hypothesized curiosity to job performance relationship.

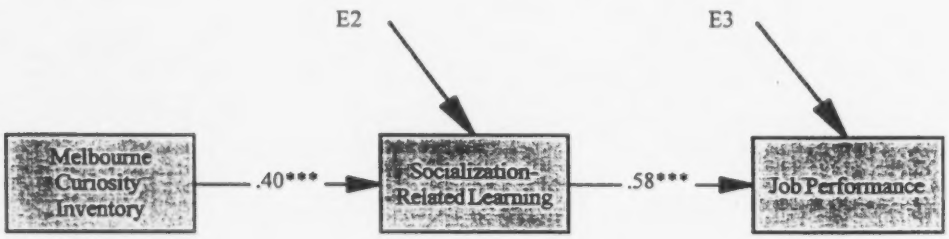

Figure 1. Curiosity to Job Performance Path Model

In Figure 2, there is an additional direct curiosity to job performance path. The standardized path coefficient for the new curiosity to job performance path is .23. The curiosity to socialization-related learning path is .40, and the socialization-related learning to job performance path's standardized path coefficient is .49. The multiple R of the direct curiosity path to job performance is .16, while the path mediated by socialization-related learning is .38.

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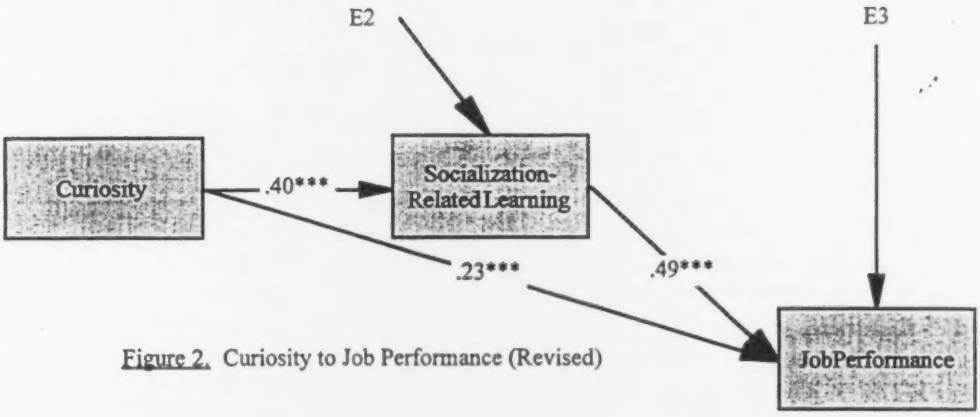

Figure 2. Curiosity to Job Performance (Revised)

Finally, Figure 3 is a path model where the dependent variable, job performance, is split into its two dimensions, i.e., Technical (task) and Interpersonal (contextual). The curiosity independent variable is, too, split into its state and trait components. With a CFI of .92, the data failed to disconfirm the model. There was no direct influence of state or trait curiosity on either of the job performance dimensions. Thus, the influence of state and trait curiosity on technical and interpersonal job performance was solely through the mediation of the socialization-related learning variable.

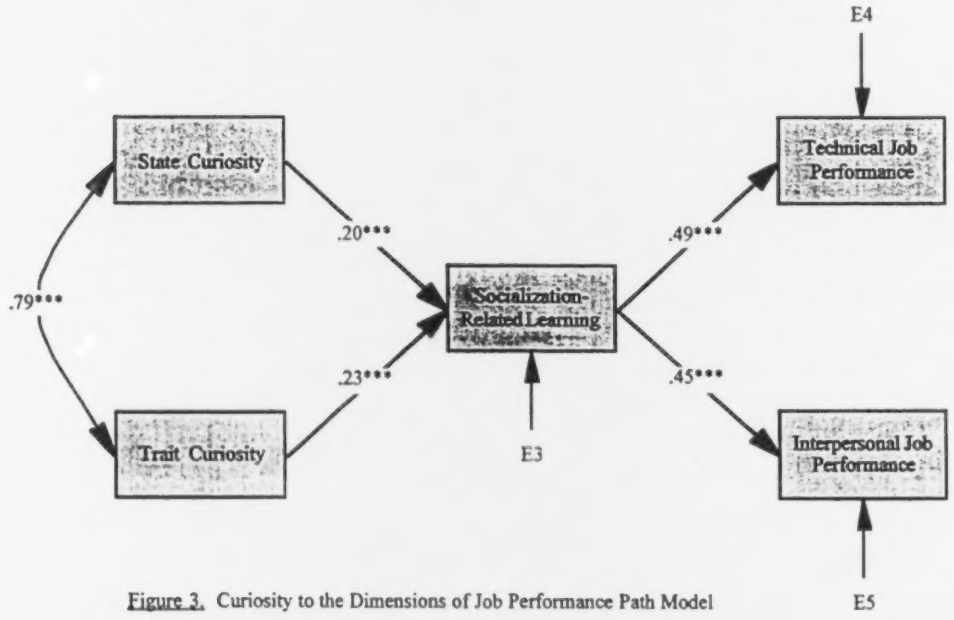

Figure 3. Curiosity to the Dimensions of Job Performance Path Model

According to the theoretical models, therefore, adult curiosity has a direct influence on socialization-related learning, but a weak indirect, but statistically significant influence on both dimensions of job performance. Secondly, the socialization-related learning variable has quite a moderate influence on both of the job performance variables. The curiosity to learning relationship was expected due to support in the literature, as curiosity is a primary motivator and director of

learning (e.g., Berlyne, 1960). Socialization-related learning, on the other hand, was expected to have an important influence on task mastery and thus technical job performance(e.g., Ostroff & Kozlowski, 1992).

The findings of this study provide empirical evidence that cognitive curiosity as measured by the MCI, STPI, or NES, seems to be a reflection, at least in part, of the importance of learning in the acquisition of job knowledge and the attainment of higher job performance, both technical and interpersonal.

Discussion and Implications of the Study

It seems clear that researchers acknowledge that curiosity plays some role in adult learning, yet little effort has been made to incorporate curiosity into existing adult learning theory. Knowles' (1990) Andragogical Model deserves special note. In his 1990 book, Knowles includes as his sixth assumption underlying the Andragogical Model, the notion that intrinsic and extrinsic motivators are important considerations for adult learning. He believed that internal motivators were the most potent.

Curiosity, too, is an internal learning motivator. Perhaps the importance and relevance of the Andragogical Model could be clarified by including curiosity in it. The empirical findings of this research suggest that curiosity plays a role in informal workplace learning, an important adult learning area. In addition, much prior research has determined that curiosity motivates and directs learning in general; it would seem appropriate to include curiosity in further discussions of adult learning in general, and the Andragogical Model in particular.

Further, the significant relationship between cognitive curiosity and socialization-related learning demonstrated in this research becomes even more meaningful when considering that service industry employees would generally be expected to possess lower curiosity levels (Naylor, 1981). Naylor claimed that Realistic, Enterprising, and Conventional work interests (according to Holland's (1973) six-fold RIASEC classification of occupational interests), such as those possessed by service industry employees in general, do not have a statistically significant relationship with curiosity.

Perhaps what is more engaging here is the idea that adult curiosity appears to be in part involved in informal workplace learning, like the socialization process, despite predictions otherwise (Naylor, 1981). Thus, curiosity and the information-seeking behaviors it elicits (e.g., question asking, thinking, and reflecting) seems to have a role in adult learning contexts, like the workplace, and not just in children's classroom situations.

These results also lend empirical support to current research (e.g., Miller & Jablin, 1991) that the socialization process may be meaningfully viewed as an information-seeking (which includes curiosity) or learning process. Employees may thus need some constant level of curiosity to proactively seek technical and interpersonal information from organizational literature, coworkers, and supervisors to adapt to an ever-changing work environment and ultimately to perform their job well.

In conclusion, the findings of this study provide empirical support for the notion that adult curiosity has a direct influence on the ever-important learning associated with the socialization process and an indirect influence on both dimensions of job performance. Curiosity should thus be an important consideration for adult educators, and HRD directors and practitioners alike. Stimulating curiosity in training endeavors may facilitate the necessary acquisition and application of learning by increasing learner arousal and promoting deeper exploration of workplace problems. Including curiosity, too, in adult learning theory building may be appropriate as it is an important component of adult learning.

HRD directors, whose primary responsibility is to manage organizational learning in order to improve employee productivity, can benefit from the knowledge that curiosity is important in workplace learning. By fostering a workplace environment where curiosity was positively acknowledged through evaluation, career development, and reward and compensation procedures, curiosity would be promoted, learning would be increased, and the organization would surely benefit.

References

Berlyne, D. E. (1960). Conflict, arousal and curiosity. New York: McGraw-Hill.

Candy, P. C. (1991). Self-direction for lifelong learning. San Francisco: Jossey-Bass.

Cavalieri, L. A. (1996). The processes of adult learning: Failure as feedback for motivation. In Proceedings of the 1st Triennial Eastern Adult, Continuing, and Distance Research Conference(in press). State College, PA: Penn State University Press.

Copeland, S., & Wiswell, A. K. (1994). New employee adaptation to the workplace: A learning perspective. In Proceedings of the National Conferenceof the Academy of Human Resource Development (pp. 35-40). San Antonio, TX: ASTD Press.

Driscoll, M. P. (1994). Psychology of learning for instruction. Boston: Allyn and Bacon.

Giambra, L. M., Camp, C. J., & Grodsky, A. (1992). Curiosity and stimulation seeking across the adult life span: Cross-Sectional and 6-8-year longitudinal findings. Psychology and Aging, 7(1), 150-157.

Holland, J. L. (1973). Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall.

Knowles, M. (1990). The adult learner: A neglected species (4th ed.). Houston, TX: Gulf Publishing.

Kozlowski, S. W. (1995). Organizational change, informal learning, and adaptation: Emerging trends in training and continuing education. The Journal of Continuing Higher Education, 2-11.

McCloy, R. A., Campbell, J. P., & Cudek, R. (1994). A confirmatory test of a model of performance determinants. Journal of Applied Psychology, 79(4), 493-504.

Miller, V. D., & Jablin, F. M. (1991). Information seeking during organizational entry: Influences, tactics, and a model of the process. Academy of Management Review, 16(1), 92-120.

Morton, S. (1993). Socialization-Related learning, job satisfaction, and commitment for new employees in a federal agency. Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University.

Motowidlo, S. J., & Van Scotter, J. R. (1994). Evidence that task performance should be distinguished from contextual performance. Journal of Applied Psychology, 79(4), 475-480.

Naylor, F. D. (1981). A state-trait curiosity inventory. Australian Psychologist, 16, 172-183.

Ostroff, C., & Kozlowski, S. W. (1992). Organizational socialization as a learning process: The role of information acquisition. Personnel Psychology, 45, 849-874.

Reeve, J. (1992). Understanding motivation and emotion. Fort Worth: Harcourt Brace.

Reio, T. G., Jr. (1997). Effects of curiosity on socialization-related learning and job performance in adults. Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University.

Schein, E. H. (1988, Fall). Organizational socialization and the profession of management. Sloan Management Review, 53-64 (reprint).

Senge, P. M. (1993). Transforming the practice of management. Human Resource Development Journal, 4(1), 5-32.

Tjosvold, D., & Field, R. H. G. (1982). Managerial decision making: The effectsof structuring controversy and consensus. pp. 1-12. (ERIC Document Reproduction Service No. ED 227389).

Tough, A. (1969). Some major reasons for learning. Self-Concept in adult participation: Conferencereport and bibliography. (ERIC Document Reproduction Services No. ED 033252). pp. 19-38.

Voss, Hans-Georg, & Keller, H. (1983). Curiosity and exploration: Theories and results. New York: Academic Press.

Wiswell, A. K. (1993). Informal learning in the workplace: On-the-job-learning for human resource development. Unpublished manuscript, Virginia Polytechnic Institute and State University, Falls Church, VA.

Organizational Innovation and Human Resource Development—A Critique

Richard J. Torraco
University of Nebraska

Organizational innovation is examined from the perspectives of HRD and management research. Critical science research is used to examine the underlying values and goals of the educator and manager with respect to innovation. Based on this critique, guidelines for future HRD research are proposed that capture more completely the value to organizational innovation offered by both education and management.

Innovation is widely recognized as an important factor in the development and success of all organizations. The importance of innovation for organizations and society as a whole is seldom disputed (Schumpeter, 1942). In recent years organizational scholars from psychology, sociology, economics, and other fields have produced over 3,000 publications (both empirical and nonempirical) on the diffusion of innovations alone (Rogers, 1983; Kuhn, 1993). Indeed, organizational growth and even survival are often tied directly to an organization's ability to adapt to a changing environment through innovation.

In spite of the importance attributed to organizational innovation, the research on this topic is fragmented and inconclusive. The terms innovation and creativity, even when specifically applied to organizations, often are used interchangeably, thus making comparative distinctions difficult (Van Gundy, 1987). Few models of innovation provide a systemic view of the subtle dynamics of innovation in organizations. Instead, past research studies seem to assume that organizations are either innovative or they are not (Aiken, Bacharach, & French, 1980; Dill & Friedman, 1979, Moch & Morse, 1977). Only recently has research underscored the subtle and serendipitous nature of innovation and the notion that it can occur in different organizational subsystems in different ways (Robinson & Stern, 1997; Human Relations, May 1997).

Continuous innovation is critical to sustaining organizational success in today's business environment. In addition, human capability is recognized as the ultimate source of innovation, and the development of human capability is the prime focus of HRD. Nonetheless, the realization of HRD's leadership potential in fostering organizational innovation requires the synthesis of new frameworks for the field. Despite the importance of innovation to the viability of organizations, no explicit role for HRD in organizational innovation has been advanced by the HRD field, nor has an implied role emerged from HRD's interest in human and organization development. Thus, there is a critical need for HRD to take a lead role in fostering innovation in organizations. This research will develop a framework for future research through which HRD can demonstrate its centrality to organizational innovation.

Methodology

An integrative review of management and HRD research was conducted following the methods specified by Jackson (1980) and Cooper (1982; 1989). Key factors related to organizational innovation from these literatures were examined. Managers and HRD professionals (educators) possess different values and goals with respect to organizational issues. Educators could be expected to emphasize the developmental aspects of work activities, while managers might be expected to place more value in the operational and entrepreneurial aspects of work activity.

This divergence among the values and goals of educators and managers was explored using a critical science approach. Critical social science increases the awareness of social actors of the contradictory conditions of action which are distorted or hidden by everyday

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understandings (Comstock, 1982). Using Comstock's critical science methodology, a dialectic tension (Carr & Kemmis, 1986; Fay, 1977) was created among the divergent and opposing ideas of managers and educators as the basis for elucidating the fundamental contradictions which are developing with respect to innovation in organizations. Contradictions are exposed between the current structures and conditions facing organizations seeking to innovate and the values and intentions of key stakeholders in the innovation process, including HRD and management. Comparison and critique of present conditions and understandings provide the basis for constructing models for future research (Weick, 1989; Whetten, 1989). Dubin's (1978) guidelines for systematic theory construction will be combined with the dialectic synthesis of critical science research (Comstock, 1982) to integrate new and existing concepts into a framework for HRD's role in organizational innovation.

Organizational Innovation

Since the 1950's, an increasing number of scholars have attempted to define the essence of creativity and innovation in both individual and organizational contexts (Isaksen, 1987). Amabile (1997) characterizes innovation as a type of entrepreneurial creativity. She defines innovation as the generation of useful ideas to establish a new business or new program to deliver products or services. According to Amabile, innovative ideas may have to do with (a) the products or services themselves, (b) identifying a market for the products or services, (c) ways to produce or deliver the products or services, and (d) ways to obtain resources to produce or deliver the products or services. As a point of departure for this paper, the term innovation refers to the generation of ideas for adaptation, change, and improvement that are critical for organizational success. Two aspects of innovation are emphasized: (a) innovation is examined as an organizational phenomenon, one that is closely associated with organizational adaptation, and, as some have argued, organizational survival, and (b) innovation is the generation of successful ideas—whether ideas address processes or outcomes, fundamentally new products/services or significant refinements of existing products/services. Innovation is not just an idea, but how well the idea is carried out in the context of the organization's mission. Innovation is a critical organization phenomenon—one on which organizations now rely more and more heavily for success.

Critique through Critical Science Research

The purpose of critical social science, an alternative to positivistic research, is "to increase the awareness of social actors of the contradictory conditions of action which are distorted or hidden by everyday understandings" (Comstock, 1982, p. 371). Critical social science is founded on the principle that we are all potentially active agents in the construction of our social world. We are all subjects, rather than the objects, of social and historical processes. The aim of critical social science is knowledge that leads to self-conscious action which liberates us from ideologically frozen conceptions of what currently exists and what is possible. Critical research is used in this study to elucidate the fundamental contradictions which are developing with respect to innovation in organizations.

Comstock's (1982) methodology for critical research used in this study involves the following seven phases:

- Identify social groups or movements whose interests are progressive.
- Develop an interpretive understanding of the intersubjective meanings, values, and motives held by all groups in the setting.
- Study the historical developments of the social conditions and the current social structures that constrain actions and shape understandings.
- Construct models of the relations between social conditions, intersubjective interpretations of those conditions, and participants' actions.
- Elucidate the fundamental contradictions which are developing as a result of actions based on ideologically frozen understandings.

- Participate in a program of education with the subjects that gives them new ways of seeing their situation.
- Participate in a theoretically grounded program of action which will change social conditions and will also engender new, less alienated, understandings and needs.

In the next section, these seven phases of critical science research will be applied to the study of innovation to clarify the different perspectives taken in HRD and management research to the study of organizational innovation. Through critical science research, misunderstandings based in the different values and ideology of the HRD and management disciplines emerge and can then by addressed through education and social change, the final phase of critical research. The conclusion of this paper expresses the need for education and change with respect to HRD and management research on innovation as a set of research guidelines for HRD scholars interested in organizational innovation.

Phase 1: Identify Social Groups. Critical research, as a vehicle for education and social change, must begin with the involvement of groups who are not only able but also willing to put the research findings into practice. Given the potentially central role of HRD to facilitate organizational innovation and the importance of innovation to the long-term organizational viability, educators and managers were identified as key groups with progressive interests in innovation.

Phase 2: Express Meanings and Values. Core values will be expressed from the perspectives of the manager and educator.

Manager Values. The following core values are derived from the foregoing literature on business entrepreneurship and innovation.

- The primary purpose of a business is to meet customer needs. As Drucker (1973) suscinctly states, "There is only one valid definition of business purpose: to create a customer" (p. 61).
- Sustained ability to meet customer needs requires organizational growth. Across all business activities, revenues must ultimately exceed costs (the requirement for positive cash flow).
- A variety of resources are needed to create value for customers such that they are willing to make purchases. Of these resources (i.e., human resources, plant, facilities and equipment, operating and investment capital), human resources have the greatest value to the organization. Human resources alone determine the ways in which all other resources are used.

Educator Values. The following are some central values of educators and HRD professionals.

- The development of human capability for a variety of work and life skills is an inherently beneficial endeavor.
- Education is a learner-centered experience wherein the responsibility and opportunity for application and integration of education with any of life's experiences, including work, resides in the learner.
- Workplace learning and the development of one's knowledge, skills and attitudes leads to enhanced job performance.
- Organization development, as defined by leading OD scholars, is an inherently beneficial endeavor.

Phase 3: Identify Social Developments and Conditions. Social developments and conditions will be discussed from a business perspective and an HRD perspective. The conditions from a management perspective follow.

- The goals of meeting customer needs and creating owner/shareholder wealth are the dominant priorities of most businesses. While important to many organizations, human resource development is rarely the primary governing objective of business organizations. A business must concurrently serve the needs of several. A business addresses the multiple, and sometimes, conflicting needs of their constituencies, including customers, employees, owners, community, and society, by establishing priorities. These priorities are manifested most directly by an organization's actions. Meeting the needs of customers and owners dominate the governing objectives of most business. Measures of business success are expressed in terms of financial and market performance (e.g., stock value,

market share, return on equity). Only recently have measures been introduced, such as the Baldridge Award, that includes criteria on the development of human resources. Advancing employee interests and human resource development, while important in some organizations, are rarely the primary governing objectives of business organizations.

- Business growth is important to organizations. Business growth is most desirable in sales, customer volume, revenue growth, market share, and other indicators of business growth such as number of employees, growth of business sites and facilities, and geographical expansion.
- Economics and finance are the primary basis for measuring business performance.

The following are conditions from the HRD perspective. The conditions from an HRD perspective follow.

- A primary focus of the HRD field is on human relationships and improving the effectiveness of human interaction.
- The methods and models of HRD are predominantly process-oriented. Based on theories of adult learning and organization development, HRD's strength in the enhancement of workplace processes is reflected in attention given to the learning process, enculturating employees to work environments, process consultation as an OD intervention, process improvement as a key feature of TQM, and other process-oriented efforts at the individual, group and organizational levels.
- Psychology and psychometrics is the primary basis for measuring work performance.

Phase 4: Construct Models of the Relationship. A model of the relationship between innovation and interpretations of the conditions and factors related to innovation is presented in Figure 1. The model has two axes—the horizontal axis represents the innovation process and the vertical axis represents the main sources of knowledge and development that fuel innovation. The horizontal axis represents the innovation process from the initial gathering of information for innovation to the final implementation of a new concept, whether a product, process or service. Fiol's (1996) model of the innovation process was used for each of the three innovation process column headings. Acquisition of knowledge addresses the process of scanning the internal and external environments for knowledge relevant to innovation and the absorptive capacity of the organization to identify and acquire the knowledge. Diffusion of knowledge refers to the range of processes and systems used to disseminate knowledge throughout the organization. New product development refers to the speed and methods by which organizations bring new ideas to product/process development and commercialization.

The vertical axis of Figure 1 represents the main sources of knowledge and development that fuel innovation. These loci of knowledge and development exist inside and outside the organization in individuals, groups, the organization, and in the environment.

Figure 1. A Model of Innovation

	THE INNOVATION PROCESS		
	A. Acquisition of Knowledge	**B. Diffusion of Knowledge**	**C. New Product Development**
1. Individual	A1	B1	C1
2. Group	A2	B2	C2
3. Organization	A3	B3	C3
4. Environment	A4	B4	C4

LOCUS OF KNOWLEDGE DEVELOPMENT

Phase 5: Elucidate the Fundamental Contradictions. The model in Figure 1 provides an integrated view of the distinctive ways in which the research perspectives of HRD and management differ with respect to the study of innovation. HRD and management research was reviewed to examine the values and goals of each discipline with respect to innovation. All articles from two top refereed journal in eacn field, the Academy of Management Review for management, and Human Resource Development Quarterly for HRD, were reviewed for the four-year period 1994-1997. A total of 101 management articles and 94 HRD articles were reviewed. A majority of recent scholarly work in management and HRD purports to have at least some influence on the generation of new, useful ideas in organizations. Consequently, no attempt was made to exclude articles in these journals from review based on their titles.

Each article was assessed against the two major constructs in Figure 1, its relation to the innovation process and its attention to the loci of knowledge/development. The topic and research questions of each article allowed classification into the phase(s) of the innovation process most appropriate for each article. Each article was also categorized by the locus/loci of knowledge and development to which the article was directed (i.e., the organizational level(s)—individual, group, and so on—at which the research was framed). Thus, all articles were mapped onto Figure 1 yielding patterns representative of the different perspectives on innovation taken by management and HRD research.

HRD Research. A majority of HRD research was primarily concerned with the vertical axis on the left side of Figure 1—the development of individuals, groups and organizations. Each locus of knowledge/development (i.e., individual, group, organization, environment) was addressed by HRD research in studies of career development, diversity and multicultural issues, job skills, performance improvement, organization development, the learning organization and in other areas.

Relative to this strong focus on knowledge and development, very little HRD research examined how knowledge and development contribute to innovation, particularly in the later stages of innovation (i.e., new product/process development). In addition, only five research articles in the last four years addressed the process of scanning the internal and external environments for knowledge relevant to innovation as an HRD activity. The acquisition of knowledge in a majority of HRD research has to do with the cognitive and learning processes, not with the strategic acquisition of knowledge. While HRD research seems appropriately focused on development, less attention is given to the innovation and entrepreneurial context within which development occurs. Few studies explicitly link developmental activities to innovation in a way that allows HRD to take credit for the success associated with organizational innovation.

Management Research. Management research primarily addressed the innovation process represented by the horizontal axis in Figure1. Most of the 101 studies reviewed addressed topics and research question related to innovation and entrepreneurship, strategic management, and organization theory. Development issues, when addressed at all, were secondary to this topics.

Given its attention to innovation and other business processes, management research emphasizes some aspects of the innovation process, particularly the acquisition of knowledge and new product/process development, more than the diffusion of knowledge. Management research involving activities such as organizational visioning, environmental scanning, portfolio analysis, strategic planning, benchmarking, and market analysis are examples of attention to acquisition of knowledge at the organization and environmental levels.

Management research gives relatively less attention to diffusion of knowledge as part of the innovation process. Research addressing the diffusion of knowledge is largely the domain of management information systems (MIS), which emphasizes a systems approach to information management more than the developmental value of information.

Phases 6 and 7: Provide Programs of Education and Action. Phases 6 and 7 of critical science research provide programs of education that give participants new ways of seeing their situation, and provide programs of action to change social conditions and engender new understandings. As applied to the study of innovation, critical science research yields the following guidelines for future organizational innovation research.

Implications for Research

Implications for Future Management Research. Management research leads other academic disciplines in the study of organizational innovation. However, management research will not reach the core of innovation to discover how entrepreneurial creativity is catalyzed and supported without more research attention to developing the human potential for innovation and to creating the conditions that support it. This requires studying the subtle dynamics of the origin and growth of innovative ideas (for example, see Robinson and Stern, 1997) and characteristics of the individuals and organizations where innovation thrives. Management research would be well served by following the prescriptions of Van de Ven (1986) to generate new insights into the "human problem of managing attention" and the "process problem of managing ideas into good currency." Similarly, Nevis, DiBella and Gould (1995) advise managers to encourage risk-taking, tolerate failure, and create "a climate of openness" as ways to support innovation.

Management research that addresses the diffusion of knowledge and organizational processes for disseminating information is largely restricted to the study of management information systems. A notable exception to this is the recent attention given by management scholars to organizational learning (Garvin, 1993; Senge, 1990; Nevis, DiBella and Gould, 1995).

Implications for HRD Research. Amabile's definition of innovation, given earlier in the paper, provides for the application of useful, new ideas to the products or services themselves, (b) identifying a market for the products or services, (c) ways to produce or deliver the products or services, and (d) ways to obtain resources to produce or deliver the products or services. Few studies reviewed for this research effectively link HRD with the development of innovative products, processes, and services. Despite the recent emphasis on realigning the HRD profession into a performance enhancement role, research has not demonstrated HRD's influence on any aspects of the innovation process suggested in the later part of Amabile's definition. HRD's research efforts have focused on development, often with peripheral regard for the business needs of its HRD stakeholders. This is despite professional exhortations to the contrary—McLagan's landmark study of the HRD profession, Models for HRD Practice, identified business competencies as one of four major skill sets for HRD professionals, and more recently, the profession renewed its call for developing HRD's performance enhancing capabilities (Rothwell, 1997).

Should research give more attention to HRD's influence on core business processes such as innovation? A key finding of this study is that HRD does not have to relinquish the value it adds in developing human potential to more effectively frame its efforts within the context of innovation. That is, HRD studies can be more directly linked to the innovation process axis of Figure 1 without diminishing its emphasis on development (the vertical axis in Figure 1). Simply stated, HRD is capable of both developing people and advancing the organization through innovation.

Researchers can reframe HRD's strong developmental emphasis within the more powerful context of innovation, assisted by the following guidelines.

- HRD research should continue to pave the way for the true integration of learning and working. Research can demonstrate the value of HRD's role in the development of skills in strategic areas such as visioning, business planning, consensus building, and other areas crucial to innovation. Research should identify leverage points for HRD's active participation in the strategic redirection of organizations.
- Explicate HRD's role in advancing the competitive position of the organization. Promising, yet untapped areas in this regard are the analysis of industries, markets, technology, and innovative work designs and business processes related to organizational growth. These are not simply topics for management development, but rather, areas in which HRD should be developing all employees.
- Frame HRD as a catalyst for human creativity within a meaningful business context. Given HRD's tenuous links to business outcomes, innovation is likely the best area for HRD to emphasize its focus on human development. Research must extend the reach of

HRD's influence all the way through to the successful implementation of creative ideas. As Amabile's work and other recent research on innovation suggest, the generation of ideas is not enough. Useful ideas must be implemented to produce new business opportunity. Research must show how HRD can both catalyze useful, new ideas and facilitate their successful implementation.

References

Aiken, M., Bacharach, S. B. & French, J. L. (1980). Organizational structure, work process, and proposal making in administrative bureaucracies. Advanced Management Journal, 23, 631-652.

Amabile, T. M. (1997). Entrepreneurial creativity through motivational synergy. Journal of Creative Behavior, 31(1), 56-69.

Carr, W. & Kemmis, S. (1986). Becoming critical: Education, knowledge and action research. London: Falmer Press.

Comstock, D. E. (1982). A method for critical research. In E. Bredo & W. Feinberg (Eds.). Knowledge and values in social and educational research. Philadelphia: Temple University Press.

Cooper, H. M. (1982). Scientific guidelines for conducting integrative research reviews. Review of Educational Research, 52(2), 291-302.

Cooper, H. M. (1989). Integrating research: A guide for literature reviews (2nd ed.). Newbury Park, CA: Sage.

Dill, D. D. & Friedman, C. P. (1979). An analysis of frameworks for research on innovation and change in higher education. Review of Educational Research, 49, 411-435.

Drucker, P. F. (1973). Management: Tasks, responsibilities, practices. New York: Harper & Row.

Dubin, R. (1978). Theory building (2nd ed.). New York: Free Press.

Fay, B. (1977). How people change themselves: The relationship between critical theory and its audience. In T. Ball (Ed.), Political theory and praxis: New perspectives. Minneapolis, MN: University of Minnesota Press.

Garvin, D. A. (1993). Building a learning organization. Harvard Business Review, July-August, 78-91.

Isaksen, S. G. (Ed.). (1987). Frontiers of creativity research. Buffalo, NY: Bearly Limited.

Jackson, G. B. (1980). Methods for integrative reviews. Review of Educational Research, 50(3), 438-460.

Kuhn, R. L. (1993). Generating creativity and innovation in large bureaucracies. Westport, CT: Quorum.

Moch, M. & Morse, E. (1977). Size, centralization, and organizational adoption of innovations. American Sociological Review, 42, 716-725.

Nevis, E. C., DiBella, A. J. & Gould, J. M. (1995). Understanding organizations as learning systems. Sloan Management Review, Winter, 73-85

Robinson, A. G. & Stern, S. (1997). Corporate creativity: How innovation and improvement actually happen. San Francisco: Berrett-Kohler.

Rothwell, W. J. (1996). ASTD models for human performance imporvement. Alexandria, VA: American Society for Training and Development.

Rogers, E. M. (1983). Diffusion of innovations (3rd ed.). New York: Free Press.

Senge, P. M. (1990). The fifth discipline. New York: Doubleday Currency.

Schumpeter, J. A. (1942). Capitalism, socialism, and democracy. New York: Harper & Row.

Van de Ven, A. H. (1986). Central problems in the management of innovation. Management Science, 32(5), 590-607.

Van Gundy, A. (1987). Organizational creativity and innovation. In S. G. Isaksen (Ed.), Frontiers of creativity research. Buffalo, NY: Bearly Limited.

Weick, K. E. (1989). Theory construction as disciplined imagination. Academy of Management Review, 14(4), 516-531.

Whetten, D. A. (1989). What constitutes a theoretical contribution? Academy of Management Review, 14(4), 490-495.

Leaders Behaving Badly: How to Block Innovation in Organizations

Darlene Russ-Eft
Zenger Miller

This study compared leadership and corporate creativity. A total of 1871 critical incidents describing leadership behaviors were gathered from 761 managers and non-managers representing 469 different organizations in the U.S. and Canada. Five leadership factors described as the CLIMB model were compared with Robinson and Stern's six factors to determine how leaders can block innovation. Implications are given for needed research and for HRD practice.

American corporations face new economic, social, and environmental circumstances requiring new and different responses. Past approaches will no longer work. Because market competition rewards the superior product, service, or process, successful organizations are now seeking ways to promote innovative thinking among their employees. Such statements are not at all radical or new. Indeed, Kanter (1983) emphasized the importance of innovative problem solving. Similarly, Van de Ven (1986) reported that repeated meetings with chief executive officers of public and private organizations revealed management of innovation as the most central concern.

One approach to investigating innovation in an organizational setting involves examination of structural and cultural factors. For example, Feldman (1988) examined both organizational culture and broader social and historical processes as they affected attitudes toward and capacity for innovation. Later, Hemmasi, Graf, and Kellogg (1990) identified industry structure characteristics, such as industry growth, related to executives' perceptions of competitor's rate of process innovation. More recently, Drazen and Schoonhoven (1996) reviewed and introduced a series of research articles examining community, population, and organization effects on innovation. Both structural characteristics and perceptions of competitors were, in turn, related to profitability.

A second approach to research on innovation and creativity focuses on the great idea-generators, such as Thomas Edison or Albert Einstein. Indeed, Max Wertheimer's classic book on Productive Thinking (1945) discusses Gauss, Galileo, and Einstein. Such case studies of geniuses were designed to help identify the key components of innovative thinking. However, the notion of the independent thinker and inventor, typical at the end of the 19th and the beginning of the 20th centuries, appears to have been replaced by innovations created within a corporate setting (Hughes, 1989; Robinson & Stern, 1997).

Rather than focusing on geniuses only, Robinson and Stern's work (1997) on corporate innovation recognizes that ordinary individuals also make important contributions. Their work shows that corporate creativity or innovation does not typically emerge from individuals working in isolation. Furthermore, they identify six factors influencing corporate creativity: alignment, self-initiated activity, unofficial activity, serendipity, diverse stimuli, and within-company communication. Recognizing the contributions of ordinary people working with others, we will adopt Van de Ven's definition of innovation. Innovation is "the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context." This definition appears compatible with those proposed by Thompson (1965) and Kanter (1983).

The hypothesis of the proposed project is that the factors influencing corporate innovation and creativity are similar to competencies identified as important for leaders in organizations. Thus, the purpose of the present study was to identify leadership competencies among people at all levels in an organization and to relate these competencies to factors affecting corporate innovation and creativity. The research questions are: What are leadership competencies needed in today's organizations? To what extent are these leadership competencies similar to or congruent with the factors influencing corporate innovation and creativity as identified by Robinson and Stern (1997)?

Methodology

Subjects. Respondents came from a variety of organizations, including heavy manufacturing, high-tech manufacturing, financial services, health and social services, business services, retail and distribution, transportation and utilities, government, and education. The study included

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organizations ranging in size from fewer than 250 employees to more than 10,000 from all of the major regions of the U.S. and Canada. These organizations all had one thing in common: all had seen above average growth in the number of employees over the past three years.

Interviewers contacted 915 organizations and completed interviews at 469 organizations (slightly more than 50%). One or two managers or one or two non-managers were interviewed at each of the cooperating organizations. The total sample size was 761, with about half as managers and half as non-managers.

Materials. The interviewers asked two main critical incident questions (e.g., Flanagan, 1954, 1974):

> Think of a time in the past month when a person in your organization showed good leadership. What did the person do that showed good leadership? What was the result of this behavior? What was the person's position in your organization?
>
> Think of a time in the past month when a person in your organization showed poor leadership. What did the person do that showed poor leadership? What was the result of this behavior? What was the person's position in your organization?

In addition to the questions on leadership, interviewers asked questions regarding the characteristics of the respondent, such as job title.

Analysis. The responses to each question were entered into a database along with information identifying the characteristics of the participants. Each incident identified as "critical" by the respondent, or judged by the analyst as so intended, was considered as a separate event. If a response included more than one incident, duplicates of the entire response were entered as a separate incident. This procedure permitted the analyst to review the different incidents for classification purposes, while still being able to identify the entire response.

A total of 1871 usable critical incidents were obtained from the sample. Of these incidents, 1264 described the actions of a manager or supervisor and 607 described the actions of a non-supervisor. The only responses not used in the analysis were those that were clearly not an incident or were uninterpretable.

The analysis of the incidents followed the guidelines set forth by Flanagan (1954, 1974). The steps included the following:

1. Selecting a general frame of reference.
2. Sorting a sample of incidents into a few piles in accordance with the frame of reference selected.
3. Formulating tentative headings for major areas.
4. Sorting additional incidents into these major areas and setting up new subcategories as necessary. During this process all incidents considered so similar that they would remain together regardless of changes in category definitions were clipped together and treated as a unit.
5. Preparing tentative definitions for major headings and generalized statement for each of the main categories of incidents.
6. Making a tentative selection of the level of specificity-generality to be used in reporting the definition.
7. Redefining major areas and categories as necessary while incidents were being classified.
8. After all incidents had been classified, reviewing definitions and revision where necessary.
9. Recording the classification of each incident.
10. Having an independent check made on the classification of all incidents.

Russ-Eft (1995) suggests that competencies can be thought of as though they are embedded components of a molecular structure of human behavior. In such a model, the behavioral indicators called critical incidents comprise the "sub-atomic particles." These critical incidents can be classified into larger units called competencies or 'atoms." Such competencies can be classified into a larger set of competencies or "elements." Finally, a set of competencies can be classified into an even larger set or "molecules".

Thus a number of critical incidents, or behavioral indicators, or "sub-atomic particles," such as "Got the staff connected to PC systems without being given step-by-step directions" and "Single-handedly started recycling projects throughout the company," were grouped into a competency labeled "Takes initiative to solve a problem." These, in turn, were placed, along with other lower-

level competencies (such as "Implements good ideas," "Works extra hours or unsupervised," and "Helps others") under a broader competency, such as "Taking Responsibility."

The critical-incident methodology did not involve a statistical analysis of a representative sample. The purpose was not to identify the most frequently mentioned leadership attributes, but rather to uncover the full range of critical attributes that make up leadership, regardless of organizational level.

Results

Fifty different competencies for universal leadership behavior emerged. These competencies, in turn, were grouped under 17 larger competencies. These 17 competencies, in turn, were associated with five major factors: **C**reate a compelling future, **L**et the customer drive the organization, **I**nvolve every mind, **M**anage work horizontally, and **B**uild personal credibility (or the **CLIMB** model). Table 1 presents a description of the 17 competencies by each of the five **CLIMB** factors. Note that the description provides details on the negative incidents in that factor and competency.

Table 1

CLIMB Factors and Descriptions

CLIMB Factors and Competencies	**Description of Leadership Competencies**
Creating a compelling future	98 positive & 31 negative incidents
Setting a vision	**Negative**: provides no vision; does not articulate goals or plans; lets outsiders chart course; doesn't support the vision
Managing a change	**Negative**: does not support a change; does not share information about a change; does not plan for change; does not involve others in the change effort
Let the customer drive the organization	44 positive & 22 negative incidents
Focusing on the customer	**Negative**: inflexible; unresponsive to customer; makes decisions without considering customer; places own convenience ahead of customer; ineptness affects the customer; complains to customers; upsets or angers customers
Involve every mind	494 positive & 434 negative incidents
Dealing with individuals	**Negative**: bad attitude toward others; berates; belittles, degrades; criticizes destructively or in front of others; micro-manages; talks behind one's back; fails to do the positive
Supporting teams and groups	**Negative**: hinders meetings, etc.; fails to do the positive
Sharing information	**Negative**: does not share needed information; does not share information at the right time; provides incorrect information; provides information in inappropriate manner.
Solving problems and making decisions	**Negative**: avoids decisions; doesn't get enough information; reverses or overrides a decision; fails to solve a problem
Manage work horizontally	181 positive & 130 negative incidents
Managing business process	**Negative**: fails to manage procedures or ongoing activities within and between groups; fails to promote consistency or efficiency between groups; does not cooperate/coordinate in inter-group activities; does not support or stick to procedures
Managing projects	**Negative**: fails to manage the "non-people" aspects of projects; fails to secure human and material resources; does not complete an effort successfully (in time/budget); unrealistic planning; constant change in schedule; shows no commitment to project

Table 1

CLIMB Factors and Descriptions (Cont'd.)

Displaying technical skills	**Negative**: makes technical errors; takes an unprofessional approach; ignores proper procedures; displays bad attitude toward work; does not work competently; lacks knowledge or understanding; poor quality work; does not support technical training.
Managing time and resources	**Negative**: fails to meet deadlines; does not use good time management; does not use resources wisely; fails to plan for a person's departure or absences.
Build personal credibility	264 positive and 173 negative incidents
Taking responsibility	**Negative**: "passes the buck;" oversteps authority; absent when needed (e.g., "goes fishing"); blames others; doesn't act when action is required; reactive, not proactive; doesn't stand firm
Taking initiative beyond job requirements	**Negative**: doesn't measure up to what is expected; doesn't offer help; won't do more than absolutely required
Handling emotions	**Negative**: blows-up; loses temper; falls apart under stress; loses control; fails to handle emotional situations
Displaying professional ethics	**Negative**: lies, cheats; show unfairness or favoritism; displays illegal actions; makes off-color jokes, threats; discusses confidential information; talks behind someone's back
Showing compassion	**Negative**: antagonizes someone under personal stress; fails to show sympathy and compassion; fails to guide someone with personal problems.
Making credible presentations	**Negative**: does not speak persuasively; fails to convey important, correct information; does not prepare well

These five factors were then associated with the six dimensions identified by Robinson and Stern (1997) as critical for corporate innovation and creativity. Table 2 presents that comparison, followed by a discussion of each pair of factors.

Table 2

Comparison of Robinson and Stern's Six Factors for Corporate Innovation and Creativity with the Five CLIMB Factors of Leadership

CLIMB Factors of Leadership	**Robinson and Stern's Factors for Corporate Innovation and Creativity**
Create a Compelling Future	Alignment
Let the Customer Drive the Organization	Diverse Stimuli
Involve Every Mind	Serendipity
Manage Work Horizontally	Within-Company Communication
Build Personal Credibility	Self-Initiated Activity
	Unofficial Activity

Create a Compelling Future / Alignment. Robinson and Stern (1997) suggested that clarity

about the key goals of the organization and commitment to initiatives promoting those goals are needed for alignment. But, if leaders want to block innovation and creativity, the critical incident data show that being unclear or secretive about the organization's goals can be very effective. The following excerpt from an incident is simply one example:

> The direction is not clear. We're not brought in. We feel left in the dark. We're pessimistic about the future.

Since corporate creativity is sensitive to knowledge about the organization's goals and directions, a leader can make great strides toward reducing an organization's ability to innovate. Simply do not create a vision of the future, or make it very fuzzy and incomprehensible.

Let the Customer Drive the Organization / Diverse Stimuli. Robinson and Stern (1997) suggested that innovation depends upon stimuli from a variety of sources. One important source is that of the customers of the organization. By preventing interaction with customers and by being inflexible with customers, a leader eliminates an important source of information that can yield important innovations for the organization.

> Our organization had an opportunity to do extensive computer training for a local hospital. The person who gives permission for the activity ... killed the project...It showed that we were inflexible and not responsive. It reinforced with employees that there are always roadblocks when something new is suggested.

This statement provides an incident that helped to block innovation within an organization, both at the time and perhaps in the future.

Involve Every Mind / Serendipity. Serendipity (as defined by Horace Walpole in 1754 – based on the Persian fairy tale The Three Princes of Serendip) combines a fortunate accident with sagacity. As Robinson and Stern (1997) indicate, people in organizations must be aware that accidents do occur and that sagacity can transform those accidents into fortunate accidents, increasing corporate creativity. Thus, to reduce an organization's ability to innovate, the leader must take greater control. This control helps others understand that their contributions are not really valued.

> He told us what needed to be done, how it needed to be done, and never explained why or gave us any latitude to make our own decisions. We didn't put our whole hearts in the project, and as a result, it was a medium job.

This incident suggests how effective a leader can be in reducing creativity and innovation:

Manage Work Horizontally / Within-Company Communication. Both the leadership data and Robinson and Stern's work suggested the importance of cross-functional understanding and communication. To block innovation, leaders must prevent employees from understanding and working with other functions. The following comments what can result:

> We waste time and end up with rework.
> Nothing ever gets resolved.

By preventing cross-function understanding and work, the organization can spend its resources solving the same problems again and again.

Build Personal Credibility / Self-Initiated Activity and Unofficial Activity. The last CLIMB factor, that of Build Personal Credibility on the part of the leader can thwart or can lead to Robinson and Stern's two factors of "Self-Initiated Activity" and "Unofficial Activity." The following incident suggests how these are connected:

> He was only working for power. He utilized original ideas of his employees and colleagues to his benefit.

The incidents and competencies within the factor, Build Personal Credibility, show a direct relationship with the two Robinson and Stern factors. Leaders who fail to display personal credibility find that followers are far less likely to undertake self-initiated activity and unofficial activity.

Implications for HRD Practice

This study implies that leaders throughout an organization can block (or conversely stimulate) corporate creativity and innovation. Furthermore, the study provided some specific examples of behaviors that can block such creativity. HRD practitioners can use this research to help organizations to improve both leadership and corporate innovation and creativity. Practitioners can use the negative incidents to grab attention and to point out some of the undesirable consequences. Indeed, this study may help some to identify the importance and consequences of leadership behaviors and competencies. Practitioners can help leaders formulate approaches that yield more positive results, both in terms of leadership and corporate creativity.

Furthermore, the critical incident study results indicated that both managers and non-managers can display leadership behaviors blocking or supporting innovation. HRD professionals can use these results to undertake developmental efforts to encourage leadership behaviors that focus on both managerial and non-managerial employees. By encouraging leadership among all employees, the organization can experience multiple levels of innovation.

Implications for HRD Research

Researchers may want to examine the relationship between leadership and corporate creativity more intensely. Perhaps researchers might consider undertaking a simulation to determine whether, indeed, such negative leadership behaviors do block innovation. As an example, we might consider the factor of Create a Compelling Future portion of Robinson and Stern's element "Alignment." They suggested that "Alignment" was the most critical factor affecting corporate creativity. O'Brien (1997) reported on an experiment to get executives to "write a mission statement which is so impossibly complicated that it has no real content (p. 10)." The experiment was successful, as judged by the experimenters, but further research could have determined the level of confusion among employees and some possible implications.

An alternative approach would be to correlate measures of the factors with some indicators of corporate creativity. Perhaps one could obtain ratings of employees on the various factors and correlate those with customer and competitor ratings of the organization's level of innovation and creativity.

Another line of inquiry involves the evaluation of practitioner interventions to improve both leadership and innovation. The results of this study suggest that, by improving leadership behaviors, corporate innovation and creativity should improve. Thus, corporate innovation and creativity can become an outcome measure to determine the effectiveness of leadership development interventions.

References

Drazin, R., & Schoonhoven, C.B. (1996). Community, population, and organization effects on innovation: A multilevel perspective. Academy of Management Journal, 39, 1065-1083.

Feldman, S. (1988). How organizational culture can affect innovation. Organizational Dynamics, 17, 57-68.

Hemmasi, M., Graf, L. A., & Kellogg, C. E. (1990). Industry structure, competitive rivalry, and firm profitability. Journal of Behavioral Economics, 19, 431-448.

Kanter, R. M. (1983). The change masters: Innovation for productivity in the American corporation. New York: Simon and Schuster.

O'Brien, T. (1997, November 16). Mission: Impertinent. West, 10-15.

Robinson, A. G., & Stern, S. (1997). Corporate creativity: How innovation and improvement actually happen. San Francisco, CA: Berrett-Koehler.

Thompson, V. (1965). Bureaucracy and innovation. Administrative Science Quarterly, 10, 1-20.

Van de Ven, A. H. (1986, May). Central problems in the management of innovation. Management Science, 32, 590-607.

Wertheimer, M. (1945, 1959). Productive thinking. New York: Harper & Row.